

ORIGINAL

NEW APPLICATION



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BEFORE THE ARIZONA CORPORATION C

COMMISSIONERS

Arizona Corporation Commission

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AZ CORP COMMISSION
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IN THE MATTER OF THE APPLICATION)

OF MORENCI WATER AND ELECTRIC)

COMPANY – ELECTRIC DIVISION – FOR)

APPROVAL OF ITS 2016-17 ENERGY)

EFFICIENCY IMPLEMENTATION PLAN AND)

REQUEST FOR PARTIAL WAIVERS)

DOCKET NO. E-01049A-15-0167

**APPLICATION FOR APPROVAL
AND REQUEST FOR PARTIAL
WAIVERS**

The Morenci Water and Electric Company ("MWE") hereby submits its proposed Energy Efficiency Implementation Plan for 2016 and 2017 ("2016-17 EEIP") in accordance with the Arizona Corporation Commission's Energy Efficiency Rules ("EE Rules") – A.A.C. R14-2-2401 through R14-2-2419. MWE requests approval of its proposed 2016-17 EEIP, which is attached to this pleading as Exhibit 1. The 2016-17 EEIP continues to maximize the potential for energy efficiency within MWE's service territory, based on the specific demographics and characteristics within its service territory.

MWE further requests that the partial waivers approved since 2012 be continued: (1) excluding Freeport-McMoRan Copper & Gold, Inc. ("Freeport") mining operations load at Morenci and Safford from the calculation of the Energy Efficiency Standard; and (2) excluding MWE from the EE Rules standards for non-mining load to the extent that MWE fails to meet those standards given the unique aspects of MWE's service territory that will be explained in the following sections.

I. Introduction.

MWE's load profile is well-documented. More than 98 percent of its load is mining load due to energy sales for Freeport mining operations at Morenci and Safford. Electricity represents a major cost input to mining operations at both locations. In terms of number of customers,

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1 MWE is a small electric utility that serves approximately 2,676 non-mining customers in and
2 around the Morenci Townsite, and the Town of Clifton. MWE serves the Freeport Morenci mine
3 in accordance with an agreement approved in Decision No. 66937 (April 21, 2004). MWE also
4 serves the mine owned and operated by Freeport Safford, Inc. as approved in Decision Nos.
5 69200 and 69211 (December 21, 2006). MWE's non-mining customers are predominantly
6 residential. Further, the mining operations at Morenci and Safford are the only two customers
7 with demand over 3 MW each month. Presently, MWE owns no generation and procures all of
8 its power from the wholesale market to meet load.

9 10 **II. Partial Waivers Request.**

11 MWE requests two partial waivers, as detailed in the following paragraphs:

12 13 **1. Waiver to exclude mining load.**

14 MWE requests to exclude mining load from the calculation of the Energy Efficiency
15 Standards under the Energy Efficiency Rules for 2016 and 2017. Electricity is a major cost input
16 to mining operations; consequently, mining companies have every incentive to make those
17 operations as energy efficient as possible. But the fact remains that those mining operations
18 require a significant amount of energy to operate both now and in the future. Further, since
19 mining operations have a high load factor (meaning the mines are operable at a level capacity 24
20 hours a day and seven days a week) there is not much opportunity for peak load reduction. Based
21 on these factors, MWE believes excluding mining load is reasonable and appropriate. MWE
22 cannot meet the proposed energy efficiency standards if mining load is included in determining
23 its energy efficiency requirements. The Commission previously granted this waiver request in
24 Decision No. 73090 (April 5, 2012) (for 2012 and 2013) and Decision No. 74368 (February 26,
25 2014) (for 2014 and 2015).

2. **Excluding MWE from the EE Rules standards for non-mining load.**

The unique factors within MWE's service territory will make it extremely difficult to meet the EE Rules standards even for non-mining load. There is little growth in MWE's service territory beyond any housing Freeport added to accommodate personnel for mining operations. Consequently, programs for new housing and new construction are not applicable in MWE's service territory. Further, many of its existing customers do not have Heating, Ventilation and Air Conditioning ("HVAC") units or pools (let alone pool pumps). Many of the programs offered by the large Arizona electric utilities to existing customers are simply not applicable to MWE's service territory (such as programs to address load from use of HVAC and pool pumps.) Still, MWE believes continuing its portfolio of programs detailed in the plan maximizes the potential for energy efficiency within its service territory – and result in savings for its customers.

Even so, MWE will very likely not be able to meet the standards within the EE Rules *even with* the mining load excluded from the requirements. The specific demographics and characteristics present in MWE's service territory make it highly unlikely *any* portfolio of programs will result in enough reduced consumption to meet the aggressive standards put forth in the EE Rules. For this reason, MWE requests continuing the waiver for 2016 and 2017 (also granted in Decision Nos. 73090 and 74368) to exclude MWE from meeting the EE Standards for non-mining load given the facts and circumstances of MWE's load and customer profile.

In consideration for these waivers, MWE notes that it is not seeking any performance incentive to continue its EE programs. MWE also did not seek any lost-fixed cost recovery mechanism in its 2011 rate case and is not seeking to implement one here. Further, MWE is seeking approval of a set surcharge amount from mining operations at both Morenci and Safford to fund programs geared towards MWE's non-mining customers. This will reduce the amount of funding necessary from non-mining customers.

III. Energy Efficiency Surcharge.

MWE proposes to maintain the same rates for its Energy Efficiency Adjustor Mechanism ("EEAM") to recover the costs associated with its 2016-17 EEIP – except to drop the set

1 surcharge for mining operations from \$650 to \$600 per month. The EEAM is designed to recover
2 costs in the same year in which funds are expended and based upon the energy efficiency budget
3 included in this plan – which assumes that MWE’s waiver requests are granted. MWE proposes
4 to roll over into subsequent years any funds not expended in a particular year. The EEAM bank
5 balance as of April 30, 2015 was approximately \$64,299.12.

6
7 **IV. Conclusion.**

8 MWE commits to working with the Commission and intends to make best efforts to
9 maximize the potential for energy efficiency within its service territory. MWE therefore requests
10 that the Commission approve its 2016-17 EEIP, grant the requested partial waivers, and approve
11 maintaining the current EEAM rates and charges.

12
13 RESPECTFULLY SUBMITTED this 27th day of May, 2015.

14 MORENCI WATER AND ELECTRIC COMPANY

15
16
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Morenci Water and Electric Company

Energy Efficiency Implementation Plan

2016 to 2017

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Background

Introduction

In Decision No. 71819 (August 10, 2010), the Arizona Corporation Commission approved the Energy Efficiency Rules (“EE Rules”). The Arizona Attorney General’s Office certified the EE Rules on November 1, 2010. The EE Rules, codified at A.A.C. R14-2-2401 through R14-2-2419, became effective on December 31, 2010. In accordance with those rules, Morenci Water and Electric Company (“MWE”) is filing its Energy Efficiency Implementation Plan for 2016 through 2017 (hereinafter referred to as MWE’s “2016-17 EEIP”).

In Decision No. 73090 (April 5, 2012) the Commission approved MWE’s first EEIP (for 2012 and 2013.) The plan consisted of four programs:

- Compact Fluorescent Lamp (“CFL”) Program.
- Appliance Recycling Program.
- Low Income Weatherization (“LIW”) Program.
- Education & Outreach Program.

These programs were originally derived from existing programs approved for Arizona Public Service Company (“APS”), Tucson Electric Power Company (“TEP”), and UNS Electric, Inc. (“UNS Electric”), but tailored to meet the unique nature of MWE’s service territory and customer profile. The Commission affirmed these programs for 2014 and 2015 in Decision No. 74368 (February 26, 2014).

For 2016 and 2017, MWE plans to continue these programs. MWE’s 2016-17 EEIP is a simplified portfolio of programs designed so that MWE can effectively administrate those programs and have the best opportunity to maximize reduced energy consumption within its service territory – resulting in savings for its residential customers and non-residential customers with a capacity of fewer than 3 megawatts (MW).

Waiver Requests

1. Waiving energy sales to mining operations.

In Decision Nos. 73090 and 74368, MWE received a waiver to exclude the energy sales to the Morenci and Safford mine sites from the calculation of the Energy Efficiency Standard required in A.A.C. R14-2-2404 through 2015. MWE is requesting that the waiver remain in place at least through 2017 – and is making the request in accordance with A.A.C. R14-2-2419. MWE’s load profile is well-documented. More than 98 percent of its load is mining load due to energy sales for Freeport McMoRan Copper & Gold, Inc. (“Freeport”) mining operations at Morenci and Safford. Electricity represents

a major cost input to mining operations at both locations; therefore there is already every incentive for those operations to be as efficient as possible. In other words, Freeport is motivated to find the most efficient production methods to allow it stay competitive in the marketplace and to meet demand in a cost-effective manner.

MWE understands from its communications with those responsible for managing the mining operations energy needs that they continue to explore means to improve processes and utilize technologies to reduce demand and usage wherever feasible. In fact, Freeport has historically budgeted \$10 million annually on energy-related technology that does not fit within the confines of conventional energy efficiency programs. The \$10-million budget is used to find new more efficient methods of producing copper throughout Freeport's copper-mining operations. Freeport independently examines means to make mining operations at both locations as efficient as possible through its Tucson Technology Center. The Center is tasked with improving mining, processing, and environmental technologies in order to improve operating efficiencies. Those improvements are done independent of any program or offering (self-directed or otherwise) MWE could provide and where any funding from the utility is simply not needed. MWE further understands that the mining operations at Morenci and Safford will continue to seek processing and technological improvements to reduce energy usage because it is in their best interest to reduce one of the largest cost inputs to operating those mines. The Commission determined that Freeport demonstrated that these measures constituted an active DSM program when it exempted Freeport from Arizona Public Service Company's energy efficiency plan requirements in Decision No. 74813 (November 13, 2014). The Commission approved a very similar exemption in Tucson Electric Power Company's ("TEP") service territory in Decision No. 74885 (December 31, 2014)¹

In addition, MWE understands that the Freeport Safford Sulfuric Acid Plant fully described in its 2012-13 EEIP remains operational. As MWE explained in that plan, this plant uses steam generated from heating sulfur to produce up to 17 MW of electric generation. Of that amount, 12.0 MW of capacity will be available for mining operations; 5.0 MW of capacity will be used for the sulfuric acid plant operations. MWE understands that it was estimated that the plant can produce up to 94,608,000 kilowatt hours (kWh) of excess power annually. That plant became operational in mid-2011. MWE believed that the plant qualified as a combined heat and power facility under the definition of the energy efficiency rules² – because it utilizes useful process heat to produce electricity and require no additional power from conventional sources besides that used for startup. Even so, MWE did not request, and is still not requesting, that the plant count toward meeting its requirements in 2016-17 because it is seeking to maintain the waiver to exclude load from mining operations.

Further, the mining operations at Morenci and at Safford require a significant amount of energy in order to operate both now and in the future. MWE cannot meet the proposed energy efficiency standards if mining operations continue. Those operations constitute

¹ See Findings of Fact 197-204.

² A.A.C. R14-2-2401(4).

the key economic driver for Greenlee and Graham Counties – producing copper cathode. Since mining operations have a high-load factor (meaning the mines are operable at a level capacity 24 hours a day and seven days a week) there is not much opportunity for peak-load reduction. MWE believes under these circumstances a waiver to exclude energy sales to Freeport mining operations at Morenci and Safford from the calculation of energy efficiency standards is appropriate and necessary.

MWE understands that Freeport agreed to report on energy efficiency activities and savings on an annual basis of mining operations as part of the exemption approval in APS's and TEP's service territory. MWE can provide similar information through the annual Progress Reports due every March 1 as required under the Electric Energy Efficiency Standard Rules - to the extent such information is provided by Freeport.

2. Waiving non-mining load to the extent necessary.

Decision Nos. 73090 and 74368 also approved a waiver for MWE excluding non-mining load to the extent necessary to recognize that its initial EEIP is in compliance with the Energy Efficiency Standard requirement in A.A.C. R14-2-2404. The Commission recognized that MWE's customer profile and unique service territory made it infeasible to meet the standard as set forth in the EE Rules, but that its portfolio of programs sought to maximize the potential for energy efficiency within MWE's service territory. MWE is requesting that this waiver also remain in place at least through 2017 – and is making the request in accordance with A.A.C. R14-2-2419. There are several reasons MWE believes granting this waiver is appropriate.

First, there is practically no growth in MWE's service territory, other than to accommodate personnel for expanded mining operations. MWE understands that Freeport has undertaken improvements to mine-owned housing and constructed some additional residences. This may include adding some Heating, Ventilation and Air Conditioning ("HVAC") units. But these improvements are being done without the need for ratepayer funds and independent of MWE's involvement. Beyond the measures that the mines are doing for mine-owned housing, there is no new home construction.

Second, many of the programs offered by APS or TEP to existing customers (for example) would not be successful in MWE's service territory because those programs are targeted toward new home construction, HVAC or pool pumps. MWE believes that most remaining homes operate with evaporative cooling and have no pool pumps. Therefore, there is a limited portfolio of programs that could be successfully adopted for MWE's service territory. Because of MWE's load profile, and the relatively low usage from residential and non-mining commercial customers within its service territory, there is little opportunity to mitigate peak demand or need for programs to inspire behavioral changes in usage.

Third, all of MW&E service territory has natural gas service from Southwest Gas Corporation and most houses have gas space heating and gas water heating. So much of

the reduced energy efficiency that is available is through the reduction in the direct use of natural gas, and not of electricity.

As a result, it is unlikely that there are additional programs that can be successfully implemented in MWE's service territory that will result in enough reduced consumption to meet the aggressive standards put forth in the EE Rules.

For these reasons, MWE requested a further waiver to the extent that it falls short of those standards. MWE believes, however, that its portfolio of programs will maximize the *potential* for energy efficiency within its service territory, should customers decide to take advantage of the offerings. This will result in savings for its customers. Further, should there be additional programs implemented by an entity with the resources to do so, MWE would be willing to become involved in that effort in a supportive role.

MWE notes that it is not seeking any performance incentive to implement these programs – nor has it sought seek any recovery for lost fixed costs due to implementing any energy efficiency programs. And it is also seeking to maintain a fixed charge from mining operations at both Morenci and Safford (at a lower amount) to fund programs geared toward MWE's residential and non-mining commercial customers. In other words, none of this funding will go towards efficiency measures for mining operations. This will reduce the amount of funding necessary from non-mining customers.

Plan Portfolio, Costs, Savings & Net Benefits

MWE's energy efficiency portfolio consists of four programs:

- Compact Fluorescent Lamp ("CFL") Program
- Appliance Recycling Program
- Low Income Weatherization ("LIW") Program
- Education & Outreach Program

MWE is proposing to maintain these programs in 2016 and 2017.

These programs are designed to reduce the use of energy by encouraging customers to implement certain energy-efficient measures, services or practices. The programs will also apply to customers in MWE-owned housing, because while the housing is mine-owned, the resident is responsible for the electric utility bill. Therefore, the resident benefits from efficiency measures that reduce that bill. As explained above, mining operations is providing significant funding for these programs.

These programs were originally selected for its 2012-13 EEIP because MWE believed they had the best chance to be successful in MWE's service territory, given the unique nature of MWE's customer profile. Programs geared toward new home construction, for example, would not be successful because there is very little growth within MWE's service territory at this time. Further, programs addressing HVAC consumption or pool

pumps would likely be unsuccessful based on the lack of either within MWE's service territory – with any HVAC installations or new construction within MWE's service territory is being done by Freeport with mine-owned housing. Therefore, MWE derived programs from those that are geared towards existing homes, appliances and CFLs due to those programs having the best chance of success (by reducing energy consumption and aiding the customers in saving money).

These programs were also selected to try and meet the standards put forth in the EE Rules for MWE. According to the EE Rules at R14-2-2404, the Cumulative Annual Energy Savings must equal to 12.00% of annual retail sales in 2015 for 2016, and 14.50% of annual retail sales in 2016 for 2017. For 2016 and 2017, MWE projects energy sales to be equal approximately 33,000,000 kWh (excluding sales to mining operations at Morenci and Safford).

Assuming those estimates are accurate, MWE will have to meet the following targets to meet the standards in the EE Rules:

Year	kWh Savings under EES
2016	3,960,000 kWh
2017	4,785,000 kWh

MWE, however, does not anticipate meeting these goals. To do so, MWE would have to offer successful programs to reduce energy usage for new construction, HVAC and pool pump savings. But none of those are programs likely to be successful in MWE's service territory. MWE has seen some increased total energy sales from non-mining customers, but that is due to the increased number of persons living in Freeport-owned housing and working at the mines. Average residential use still remains within a range of 585 to 615 kWh per month.

Many of MWE's customers use evaporative cooling and virtually all customers do not have pools. Therefore, those types of programs offered by other utilities in their service territories would not be effective in MWE's service territory. Further, any additional programs MWE could possibly offer would likely fall substantially short of being cost-effective – even according to the Societal Cost test ("SC Test") using Staff's analysis and formulae. Even so, MWE believes its program offerings will maximize the potential for energy efficiency savings in its service territory, and that the following kWh savings shown below could be obtainable if enough customers utilize all the program offerings:

Year	kWh Savings achieved
2016	113,410 kWh
2017	226,820 kWh

Also, because MWE's cost for purchased power is low (due to how it is able to take advantage of power procured for the mining operations in Morenci), MWE's avoided cost is less and the magnitude of the benefit to customers per-kWh used is less

pronounced. The purchased power cost impacts the cost-effectiveness of the programs – as measured under the SC Test.

The kWh savings is based on anticipated savings from each of the following programs:

Program	Est. kWh savings for 2016	Est. kWh savings for 2017
CFL	82,500	165,000
Appliance Recycling	14,760	29,520
Low-Income Weatherization	16,150	32,300
Education & Outreach	0	0
TOTAL	113,410	226,870

MWE's budget for its four programs is approximately \$21,700 per year for 2016 and 2017. Since the appliance recycling or low-income weatherization programs have not been utilized yet, the budget figures for those programs remain preliminary estimates. For the CFL program, MWE's budget is based on its experience with the program in 2014. Further, MWE dropped its budget for education and outreach based on its experience. More details about the proposed surcharge are provided later in this section. MWE's Energy Efficiency Implementation Budget is also detailed below.

Using the unit cost of purchased power as indicated below, MWE anticipates the avoided costs would equal the following for 2016 and 2017:

Year	Utility Avoided Cost for Non-Mining Customers over one year
2016	\$4,722.62
2017	\$9,445.24

In addition, MWE anticipates the following environmental benefits, based on the type of purchased power most likely to be displaced by the programs in 2016 and 2017 cumulative.³

Environmental Factor	Value (per Unit)	Measurement	Amount
SOx	0.00445	lbs/MWh	4.74 lbs
NOx	0.08455	lbs /MWh	107.07 lbs
CO2	899	lbs/MWh	1,136,448 lbs
PM10	0.0247	lbs/MWh	30.72 lbs
Water Savings	317	Gallons	400,726 gallons

³The values and measurements were taken from APS's Environmental Benefits listed on page 15 in its 2013 Demand Side Management Implementation Plan – Supplemental Filing. The benefits are totaling the total benefits derived for the years 2016 and 2017 only.

MWE analyzed the cost-effectiveness of each program and the entire portfolio using Staff's SC Test and analysis, based on the following figures and assumptions:

Unit Cost of Purchase Power	\$0.041642 per kWh
Escalation Rate for Purchase Power	\$0.00757 per kWh
Real Discount Rate	3.00%
Nominal Discount Rate	3.00%

The following shows the cost-effectiveness of the programs within the MWE Energy Efficiency Plan as established by Commission order.

Program	Benefit / Cost Ratio
CFL Program	1.81
Appliance Recycling Program	2.15
LIW Program	0.91 ⁴
Education & Outreach	N/A

Baseline Information

In terms of estimated demand and energy, MWE anticipates that its retail energy sales for 2016 and 2017 (excluding kWh usage by mining operations at Morenci and Safford) will remain relatively stable, and that its estimate is a reasonably accurate measure of energy sales. Therefore, MWE estimates non-mining retail energy sales to equal approximately 33,000,000 kWh annually through 2017. Maximum peak load for customers excluding Freeport Morenci and Freeport Safford is estimated to be approximately 5 MW (out of a total of 256 MW) under a baseline condition. MWE does not believe a baseline study would be an efficient use of resources – since there are limited (if any) new market opportunities beyond what is being offered.

Budget

MWE's budget projections are based on the programs it is proposing as part of its 2016-17 EEIP. MWE reviewed public information available as to other utilities' budgets for their respective DSM and Energy Efficiency programs – while specifically tailoring those programs to be successful within MWE's unique service territory. MWE believes its programs have the potential to maximize energy savings within its service territory.

More detailed budgets are provided in the specific program descriptions that follow this introduction:

⁴ Benefits measured over average useful life of weatherization improvements – 17.50 years and an average cost of \$3,000 per home.

Program	2016	2017
CFL Program	\$3,950	\$3,950
Appliance Recycling Program	\$1,750	\$1,750
Low-Income Weatherization	\$15,500	\$15,500
Education and Outreach	\$500	\$500
TOTAL	\$21,700	\$21,700

The programs are designed to provide direct benefits to customers. MWE proposes to minimize the amounts necessary for implementation and administration, and to only include budgeted amounts for tasks and functions necessary to carry out the programs. MWE does not anticipate customers electing to self-direct through MWE. As explained above, both the mining operations at Morenci and Safford have every incentive to reduce energy use and have taken several steps to do so – independent of any programs MWE would implement.

Performance Incentives

MWE is not proposing any performance incentives for its 2016-17 EEIP. MWE may determine to propose performance incentives in future years, but is not seeking them here in consideration for the waiver requests.

Energy Efficiency Adjustor Mechanism Rates for 2016 and 2017

MWE proposes to maintain its Energy Efficiency Adjustor Mechanism (“EEAM”) approved in Decision No. 73737 (February 20, 2013)⁵ to recover the costs associated with its 2016-17 EEIP. The one exception is dropping the surcharge for mining operations at Morenci and Safford to \$600 per month per operation, due to the decrease in the anticipated budgets. The EEAM is designed to recover costs in the same year in which funds are expended and based upon the energy efficiency budget included in this plan. MWE proposes to roll over into subsequent years any funds not expended in prior years. MWE proposes to have the rates and charges for the EEAM in effect for the two years its plan is effective.

Even though MWE is requesting to waive the energy sales to the mining operations at both Morenci and Safford, both entities are assessed a set amount per month, which MWE proposes to maintain for 2016 and 2017. The per-kWh EEAM rate for residential

⁵ This adjustor was converted from MWE’s Energy Efficiency Surcharge (“EES”) in its most recent rate case – approved in Decision No. 73737 (February 20, 2013) based on a recommendation from Utilities Division Staff. The EES had been approved in Decision No. 73090.

and non-mining non-residential customers, along with the set amounts to the mines, is designed to recover the budgeted amount for MWE's 2016-17 EEIP.

MWE proposes the following rates for its EEAM:

- For all residential and non-mining non-residential customers: maintaining the per-kWh charge of \$0.000245 per kWh per month.
- For mining operations at Safford and Morenci: lowering the set amount to \$600 per month each.

Under this proposal, the following amounts are likely to be collected annually from the EES towards the 2016-17 EEIP:

Customer Class	Avg. kWh Use	Rate	Estimated Monthly Total Collected (aggregate)	Estimated Annual Amount Collected (aggregate)	% of MWE's 2016 and 2017 EEIP Budgets
Residential	604	\$0.000245	\$348.64 ($\$.148 * 2,356$ customers)	\$4,183.69	18.17%
Non-Residential	4,723	\$0.000245	\$370.28 ($\$.16 * 320$ customers)	\$4,443.40	19.30%
Freeport Morenci and Freeport Safford	N/A	\$600 per month each	\$1,200 ($\$600 * 2$ customers)	\$14,400	62.53%
TOTAL				\$23,027.09	100%

Decision No. 73737 required MWE to establish an energy efficiency bank balance – to track Energy Efficiency costs and collections under its EEAM and to report the bank balance in each EEIP that MWE files. In accordance with that Decision, the current EEAM bank balance for MWE (as of April 30, 2015) is \$64,299.12.

MWE Programs for 2016 and 2017

1. Compact Fluorescent Lamp (“CFL”) Program (Continuing Program)

Purpose

MWE will continue to distribute CFLs from its office and possibly through events such as fairs, home shows, festivals, community events and trade shows in its service area – and to also distribute CFLs through local charitable organizations and community groups. This will still be one of the simplest and easiest ways customers within MWE’s service territory can reduce energy use. MWE intends to increase the availability and information regarding the use of CFLs by customers as one way to reduce energy consumption and increase efficiency of energy use.

The CFL Program goals remain to: (1) increase the availability of CFLs for MWE customers; (2) promote the use and acceptance of CFLs (and other energy efficiency lighting products when appropriate); and (3) provide information regarding the benefits of using CFLs to reduce peak demand and overall energy consumption for its residential and non-residential customers.

Program Description

The program’s focus remains on expanding the availability of CFLs within its service territory. Even so, the program will not exclude other energy-efficient Energy Star lighting products. MWE will continue to purchase and distribute CFLs to customers from its office and at events within its service territory. MWE customers will be made aware of the availability of CFLs. This program will be available to all MWE customers, and that both MWE’s residential and non-residential customers will participate.

MWE anticipates the following products and services through the program will include:

- CFL products including screw-in spiral CFLs, replacements for standard base incandescent lamps, spot and perhaps flood CFLs and dimming CFLs.
- Educational materials providing information to consumers and retailers about the benefits of using CFLs and other energy efficient lighting products.

While MWE understands the market for CFLs has matured in the last few years, its service territory has still likely not reached the same level of maturity. MWE believes that there is still considerable potential that the CFL giveaway program will enhance the use of energy efficient lighting significantly beyond its current level.

Implementation

The program was implemented on May 1, 2013. MWE provides CFLs to eligible customers while supplies last at its office. MWE may solicit assistance from the Southeastern Community Action Program ("SEACAP") to the extent necessary to giveaway CFLs at events within its service territory and to track the number of CFLs provided and to calculate energy savings. To the extent feasible, MWE will work with the Arizona Energy Office to provide training, education and awareness.

Marketing and Communications

MWE will have general information regarding the benefits of energy efficiency lighting to customers – including information how CFLs can reduce customer energy bills, provide equal or better lighting output and quality, and benefit the environment. Finally, MWE will provide information regarding the safe and proper disposal of CFLs.

Measurement and Evaluation

MWE will collect necessary data to track how the program is meeting its stated goals and objectives. This includes the following data:

- The number of CFLs provided to customers – organized by type.
- Estimated kWh savings per type of CFL provided.

MWE will use this data and best efforts to track the following information:

- Aggregate savings in kW (capacity) and kWh (energy).
- Environmental benefits, including reduced emissions and water savings.
- Incremental benefits and net benefits, in dollars.
- Costs incurred for the program – disaggregated by type of cost (e.g. costs for the CFLs, administrative costs, monitoring and evaluating).

MWE will evaluate the progress of this program toward meeting energy efficiency goals, including noting any problems, the level of customer participation, and when modifications to the program are warranted or justified.

Program Budget

Table 1 – 2016 to 2017 Budget

Year	2016	2017
Total Budget	\$3,950	\$3,950
CFLs provided	1,250	1,250
Administrative Costs	\$200	\$200
Administration as a % of Total Budget	5.1%	5.1%

Budget projections are based on the summary of participation and expenses from January through December 2014.

Estimated Energy Savings

Table 2 provides the assumed base lamp wattage and corresponding CFL wattages as recommended by manufacturers. This table also provides the expected demand and energy savings:

Table 2 – Estimated Energy and Demand Savings from CFLs

Fixture Type	ES Integral CFL			
Incandescent Fixture Watt Range ⁶	29	43	53	72
CFL Fixture Watt Range	9	14	19	23
Energy Saved ⁷	200 kWh	290 kWh	340 kWh	490 kWh
Customer savings based on the replacement cost of incandescent bulbs ⁸	\$15.26	\$22.12	\$25.94	\$37.38

⁶ Based on the new energy standards that took effect from January 1, 2012 through January 1, 2014 in accordance with the Energy Independence and Security Act of 2007 ("EISA"). See http://www.energystar.gov/ia/products/lighting/cfls/downloads/EISA_Backgrounder_FINAL_4-11_EPA.pdf?8ac8-f4e7. This modifies the baseline by shifting 100, 75, 60 and 40 Watt bulbs to 72, 53, 43, and 29 Watts respectively. This was done in accordance with Finding of Fact Nos. 45 through 47 in Decision No. 73090 and to accurately state the value of energy savings for cost-benefit purposes.

⁷ Based on a 10,000-hour life.

⁸ Using energy rate equaling \$0.07628 per kWh approved in Decision No. 73737.

Table 3 shows costs of CFLs:

Table 3 – Cost of CFLs⁹

Watt-Equivalent	Cost
29	\$2.20
43	\$3.95
53	\$4.19
72	\$5.51

Table 4 shows estimated energy savings from this Program for 2016 and 2017. Table 4 shows projected annual environmental benefits.

Table 4 – Projected Lamp Giveaways and Capacity and Energy Benefits¹⁰

Annual Projected Lamp Sales	1,250
Capacity savings (kW) ¹¹	41.25
Energy Savings (kWh) ¹²	82,500

MWE believes that CFL purchases will result in water savings and reductions in NOx and SOx if CFLs replaced incandescent bulbs. The following is its best estimate of savings:

Table 5 – Projected Environmental Benefits, 2016 and 2017¹³

	Value (per Unit)	Measurement	Amount
SOx	0.00445	lbs/MWh	1.83 lbs
NOx	0.08455	lbs/MWh	35.0 lbs
CO2	899	lbs/MWh	370,837 lbs
PM10	0.0247	lbs/MWh	10.18 lbs
Water Savings	317	Gallons	130,762 gallons

⁹ See e.g. <http://www.lightbulbsdirect.com/CTGY/PlugInSpiral.html> for verification of cost information.

¹⁰ Assuming giveaways are 25% of each type of bulb (9, 14, 19 and 23 Watt CFL).

¹¹ Average Watt savings per bulb (33 Watts) multiplied by number of bulbs (1,250).

¹² One-year savings assuming average use per day of approximately 5.47 hours (average life of 5 years with 10,000 hours of use). Average lifetime savings of 330 kWh divided by 5 years equals 66 kWh. That multiplied by 1,250 bulbs equals yearly kWh savings of 82,500 kWh.

¹³ Calculated based on estimated cumulative savings of approximately 412.5 MWh over life of DSM.

Program Cost Effectiveness

MWE considered the following factors when determining the cost effectiveness of this program:

- Net demand and energy savings attributable to the program;
- Net incremental cost to the customer of purchasing qualifying products;
- Program administration costs;
- The present value of Program benefits including avoided costs over the life of the measures;
- Lost revenues.

Table 6 – Cost-Effectiveness Analysis Assumptions

DSM Life of Measure	5 years
# of Units	1,250
Average use per year	2,000 hours (5.47 hours per day)
Average kWh saved per year.	66 kWh
Average kW reduction	0.033
Incremental Measure Cost	\$4.16

Table 7 is the benefit/cost analysis for this Program, using the Utilities Division Staff formulae and spreadsheet analysis.

Table 7 – Benefit/Cost Analysis Results Summary

PV of DSM Savings	\$16,087.18
PV of DSM Costs	\$8,883.50
PV of Net Societal Benefits	\$7,203.69
Benefit – Cost Ratio	1.81

2. Appliance Recycling Program

Purpose

MWE plans to continue its Appliance Recycling Program offering for 2016 and 2017, but with changes in implementation. The purpose is to provide a means for the removal of old or second refrigerators and freezers in households. MWE will facilitate scheduling, pick-up, and disposal services. The Appliance Recycling Program goals are to: (1) reduce energy consumption; and (2) keep inefficient appliances out of the used market.

Program Description

The program focuses on providing a means for MWE customers to recycle appliances – particularly refrigerators and freezers. All residential and non-residential customers are eligible for this program. MWE will coordinate free pick-up and recycling of old or second operable refrigerators and freezers. These older refrigerators and freezers will be disposed of in an environmentally safe manner. Further, as a means of additional incentive, customers will be offered a cash rebate of \$30. Refrigerators and freezers will be disposed of in accordance with applicable standards, including proper disposal of those appliances with Chlorofluorocarbons (“CFCs”).

Implementation

For 2016 and 2017, MWE will be receiving the assistance of the mining operations at Morenci (“Morenci Mine”) for the disposal of old refrigerators and freezers.¹⁴ MWE had secured an Arizona contractor based out of Phoenix, Arizona to properly dispose of old refrigerators and freezers. Unfortunately, the contractor subsequently determined it would not be cost-effective for it to provide this service in MWE’s territory. MWE has since set up a process with the Morenci Mine, where it will take the refrigerators and dispose of them. A specific contact person for the Mine will coordinate with the customer and MWE. That person at the Morenci Mine has been selected.

The process will be as follows: The customer will first call the MWE office and request removal and recycling of an old refrigerator or freezer. MWE will then inform the Morenci Mine about the pick-up. Next, the MWE contact will schedule a meeting with the customer to ensure that the requirements of the program are met. MWE will then be advised, and will provide the rebate to the customer. Simultaneously, the contact at the Morenci Mine will coordinate the pick-up and disposal for the appliance. The Morenci Mine will store the appliances until they can be disposed of.

¹⁴ Using the Morenci Mine other than an outside contractor will start in 2015 because of the refusal of the outside contractor to travel to Morenci and to keep the program active.

Disposal of appliances will be in accordance with U.S. EPA best practice industry standards. Because of MWE's relatively small service territory and remote location, it does not expect any significant free rider or spillover issues. While there has been no participation to date, MWE's budgets and savings estimates are based on disposing up to 20 units per year. MWE expects to receive some participation in the program. Although implementation is significantly different than originally envisioned, MWE does not expect the costs for the program to be materially different from what it estimated in prior years. Even so, MWE will adjust those costs accordingly in future budgets and will provide updated figures as required in the compliance filings.

Marketing and Communications

MWE will provide education and promotional materials designed to inform customers about the benefits of recycling second refrigerators and freezers in particular. MWE will provide information regarding the cost of operating second refrigerators and freezers and older more inefficient appliances, the benefits of replacement with Energy Star® qualified models, and the importance of proper disposal and recycling of older units.

Measurement and Evaluation

MWE will collect necessary data to track how the program is meeting its stated goals and objectives. This includes the following data:

- The number of refrigerators and freezers recycled through the program.
- The specifications of units recycled (if feasible) and the specifications of units replacing the recycled units.

MWE will use this data and best efforts to track the following information:

- Aggregate savings in kW (capacity) and kWh (energy).
- Environmental benefits, including reduced emissions and water savings.
- Incremental benefits and net benefits, in dollars.
- Costs incurred for the program – disaggregated by type of cost (e.g. costs for the pickup and recycling of appliances, administrative costs, monitoring and evaluating).

MWE will evaluate the progress of this program toward meeting energy efficiency goals, including noting any problems, the level of customer participation, and when modifications to the program are warranted or justified.

Program Budget

Table 1 – 2016 to 2017 Budget

Year	2016	2017
Total Budget (for 20 units)	\$1,750	\$1,750
Incentives (Discount Pricing)	\$600	\$600
Removal Costs	\$1,000	\$1,000
Administrative Costs	\$150	\$150
Administration as a % of Total Budget	8.6%	8.6%

MWE estimates that the cost of removal will be approximately \$50 per refrigerator, excluding the rebate.

Estimated Energy Savings

Total annual participation goals and demand and energy savings are present in Tables 2 and 3. MWE believes that up to 20 appliances annually will be recycled by the program.

Table 2 – Estimated Annual Energy and Demand Savings per Unit¹⁵

Measure	Refrigerators
Net Annual kWh Savings per Unit with Losses	738
Net kW Savings per Unit with Losses	0.164

Table 3 – Estimated Annual Energy and Demand Savings

Number of expected participating units	20
Peak (kW)	3.28
Energy Savings (MWh) (cumulative)	14.76

¹⁵ Calculations of savings adopted from CPUC, Energy Division Report: Appliance Recycling Program Impact Evaluation – Volume I: Report, Work Order 35, October 24, 2014 at Table 9 (located at http://www.calmac.org/publications/2010-2012_ARP_Impact_Evaluation_Final_Report.pdf)

Table 4 – Projected Environmental Benefits, 2016 and 2017¹⁶

	Value (per Unit)	Measurement	Amount
SOx	0.00445	lbs/MWh	0.0657 lbs
NOx	0.08455	lbs /MWh	12.48 lbs
CO2	899	lbs/MWh	132,692 lbs
PM10	0.0247	lbs/MWh	3.65 lbs
Water Savings	317	Gallons	46,789 gallons

Program Cost Effectiveness

MWE considered the following factors when determining the cost effectiveness of this program:

- Net demand and energy savings attributable to the program;
- Net incremental cost to the customer of purchasing qualifying products;
- Program administration costs;
- The present value of Program benefits including avoided costs over the life of the measures; and
- Lost revenues.

Table 5 – Cost-Effectiveness Analysis Assumptions

DSM Life of Measure	10 years
# of Units	20
Average kWh saved per year.	738 kWh
Average kW reduction	0.164
Incremental Measure Cost	\$80.00

Table 6 is the benefit/cost analysis for this Program, using the Utilities Division Staff formulae and spreadsheet analysis.

Table 6 – Benefit/Cost Analysis Results Summary

PV of DSM Savings	\$6,981.21
PV of DSM Costs	\$3,252.43
PV of Net Societal Benefits	\$3,728.78
Benefit – Cost Ratio	2.15

¹⁶ Calculated based on estimated cumulative savings of approximately 147.6 MWh over the life of DSM measure.

3. Low Income Weatherization Program

Purpose

MWE recognizes that utilities typically consume a larger percentage of low-income family's income than for higher-income families – especially those at or below the poverty level. MWE further recognizes that many low-income customers live in older or mobile homes built before energy efficient construction methods were developed. MWE proposes to continue its LIW Program and provide financial assistance to install measures that improve comfort and reduce overall energy consumption for eligible customers. The LIW Program will remain focused on reducing electric consumption. Because most homes in MWE's service territory have evaporative cooling, it is unclear how much this program will reduce summer peak (kW), but it should reduce energy (kWh) consumption. MWE believes the LIW program will help to lower the average household energy consumption for low-income customers and improve the quality of life for these customers.

Program Description & Implementation

The program remains focused on providing a means for MWE low-income customers to reduce their electric and natural gas consumption. MWE is aware of other programs that provide funding, such as the Federal Department of Energy ("DOE") and the Low Income Home Assistance Program ("LIHEAP"). MWE's funding will provide additional assistance to complete additional home repair, equipment repair or replacement and other nominal weatherization steps that impact energy consumption.

MWE still intends to provide funding to SEACAP for selected approved weatherization items. SEACAP agency representatives will determine what items are installed for each home. Funding provided to LIW agencies from DOE limits installation of items installed to only those measures that combine, contribute a minimum of 20% energy savings due to LIHEAP requirements. Funding from MWE will not be limited to the percentage of energy savings and may allow agencies to complete additional work in each home.

Further, SEACAP Agencies may be asked to install certain energy saving products in any home they enter through its Housing Repair, Rehabilitation, & Weatherization, or its Emergency Assistance programs. This may support an increase in installation of low-flow showerheads, faucet aerators, CFLs, or hot water heater blankets.

MWE's program will be promoted through SEACAP, which directly provides weatherization services in MWE's service territory. MWE will provide funding to SEACAP when MWE receives documentation of the work completed. SEACAP will determine participant eligibility and priority and supervise completion of all work – as well as providing program administration, marketing, planning coordination, labor, materials, equipment, and tracking results. Based on conversations with SEACAP, MWE understands that the typical, contribution is approximately \$3,000 per residence for those

low-income customers or homes that require extensive home repair for significant energy (kWh) savings.

Marketing and Communications

MWE will inform customers about the LIW Program, in addition to any referrals made by local Department of Economic Security (“DES”) representatives, health care service agencies and individual case workers. MWE will provide information about SEACAP, which is engaged in directly providing weatherization to customers within its service territory.

Measurement and Evaluation

MWE, through SEACAP, will collect necessary data to track how the program is meeting its stated goals and objectives. This includes the number of homes weatherized and what measures were taken for each home to improve comfort and reduce energy consumption.

MWE will use this data and best efforts to track the following information:

- Aggregate savings in kW (capacity) and kWh (energy).
- Environmental benefits, including reduced emissions and water savings.
- Incremental benefits and net benefits, in dollars.
- Costs incurred for the program – disaggregated by type of cost (e.g. costs of measures used to weatherize homes, administrative costs, monitoring and evaluating).

MWE will evaluate the progress of this program toward meeting energy efficiency goals, including noting any problems, the level of customer participation, and when modifications to the program are warranted or justified. Currently, no MWE customers have used the program.

Program Budget

Table 1 – 2016 to 2017 Budget

Year	2016	2017
Total Budget	\$15,500	\$15,500
Weatherization Funding	\$15,000	\$15,000
Administrative Costs	\$500	\$500
Administration as a % of Total Budget	3.23%	3.23%

Estimated Energy Savings

MWE anticipates that approximately five low income customers could be served annually in MWE's service territory through local weatherization agencies. The energy savings from this activity is presented in Table 2.

Table 2 – Estimated LIW Program Estimated Energy and Demand Savings¹⁷

Demand (kW) savings per home	0.832
Savings (kWh) per home	2,270
Savings (therms) per home	33
Total Savings (in kWh) per home.	3,230.3
Estimated cost per home	\$3,000
Number of customers assuming estimated average cost per home	5.00

Table 3 – Projected Environmental Benefits¹⁸

	Value (per Unit)	Measurement	Amount
SOx	0.00445	lbs/MWh	1.26 lbs
NOx	0.08455	lbs /MWh	23.90 lbs
CO2	899	lbs/MWh	254,103.25 lbs
PM10	0.0247	lbs/MWh	6.98 lbs
Water Savings	317	Gallons	89,600.37 gallons

Program Cost Effectiveness

MWE considered the following factors when determining the cost effectiveness of this program:

- Net demand and energy savings attributable to the program;
- Net incremental cost to the customer of purchasing qualifying products;
- Program administration costs;
- The present value of Program benefits including avoided costs over the life of the measures;
- Lost revenues.

¹⁷ Based on TEP's Progress Report for the period January through December 2014, Low-Income Weatherization Program, in Docket E-00000U-15-0053. 1 therm equals approximately 29.3 kWh.

¹⁸ Calculated based on estimated cumulative savings of MWh for five homes over a program-measure life of 17.5 years.

Table 4 – Cost-Effectiveness Analysis Assumptions

DSM Life of Measure	17.5 years
# of Units	5
Average kWh saved per year.	3,230.3 kWh
Average kW reduction	0.832 kW

Table 5 is the benefit/cost analysis for this Program, using the Utilities Division Staff formulae and spreadsheet analysis. According to MWE's analysis, which assumes a useful life of 17.5 years and an average cost per home of \$3,000, the program will not be cost effective. Regardless, MWE believes this can be a valuable program because of the benefits it can provide for low-income customers to reduce their bills. MWE believes the program can be considered cost-effective if one takes into account projected environmental benefits (not monetized, but which are greater than zero). In addition, the useful life for the measures may be greater than 17.5 years, or the cost per home may be less than \$3,000. Both factors may lead to the benefit/cost ratio for this Program at over 1.0, which would mean that the Program would be cost effective.¹⁹

Table 5 – Benefit/Cost Analysis Results Summary

PV of DSM Savings	\$13,738.23
PV of DSM Costs	\$15,048.54
PV of Net Societal Benefits	(\$1,310.22)
Benefit – Cost Ratio	0.91

¹⁹ For instance, a DSM life of 20 years, with a cost per-unit of \$2,800.00, would lead to a benefit/cost ratio of approximately 1.08.

4. Education & Outreach Program

Purpose

The purpose of the Education & Outreach Program is to provide additional materials to communicate clearly the concepts of DSM, energy efficiency and demand response.

Program Description

MWE will communicate the benefits of energy conservation and peak demand to customers, as well as educating customers about energy efficiency products including CFLs. MWE will do so in the following ways:

- For residential customers – provide materials that show simple measures on how customers can reduce their electric bills. MWE will also provide information regarding its other energy efficiency programs to the customers eligible for those programs.
- For commercial customers – provide materials that show general energy conservation information. MWE will also provide information regarding its CFL and Appliance Recycling Programs.
- Education programs for schools within MWE's service territory designed to show students the importance and value of energy conservation.

Implementation

Regarding residential and commercial education, MWE will have materials available at its office regarding the benefits of energy conservation, DSM and demand response. MWE will provide a bill insert and publish notice of the availability of such materials for pickup. MWE expects to continuously implement the program.

Marketing and Communications

See the Implementation section above. MWE may seek other means to notify and inform customers on the benefits of energy efficiency. This may include advertising on the local Morenci radio station.

Measurement and Evaluation

MWE will monitor the program and attempt to get feedback from its customers as to the effectiveness of the program and whether it persuades customers to pursue energy efficiency measures beyond what is being provided through the Company's 2016-17

EEIP. MWE will also solicit feedback from participating schools on whether the materials provided are effective.

Program Budget

Table 1 – 2016 to 2017 Budget

Year	2016	2017
Total Budget	\$500	\$500

Estimated Energy Savings

MWE cannot calculate energy and demand savings for this program. MWE believes that the program is still beneficial in informing customers who live in a relatively remote area about energy efficiency and its benefits.

Program Cost Effectiveness

MWE cannot calculate whether the program will be cost-effective in terms of kWh and kW, but believes it will help to heighten awareness of how energy efficiency can directly benefit customers.

***CFL Program**

Program cost (for 2014) = (total program cost - financial incentives)/# of units

*Used incremental measure cost from MWE CFL Prt. kWh saved = projected savings for 2016 divided by # of units (82,500/1,250)

*kWh saved = savings projected for 2016 divided by # of units (41,250/1,250)

*Incremental measure cost \$4.16 *program cost (\$3,950/1,250) = \$3.16

*real esc rate of O&M gen comes from EIA data for natural gas prices for electric use-average of the rate of change over the lifetime of the measure

year	DSM installed base year	n	kw saved	kWh saved	DSM cap cost nom \$	DSM O & M nom \$	DSM avoided PP cost nom \$	cap cost no dsm nom \$	cap cost with DSM nom \$	fixed O&M no dsm nom \$	fixed O&M with DSM nom \$	DSM costs	PV avoided or defrd gen costs
2015	0	0	0	0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2016	1	41.25	82500	\$9,150	\$0	\$0	\$3,461.47	\$0.00	\$0.00	\$0.00	\$0.00	\$8,883.50	\$3,360.65
2017	2	41.25	82500	\$0	\$0	\$0	\$3,487.67	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,287.47
2018	3	41.25	82500	\$0	\$0	\$0	\$3,514.08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,215.88
2019	4	41.25	82500	\$0	\$0	\$0	\$3,540.68	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,145.85
2020	5	41.25	82500	\$0	\$0	\$0	\$3,567.48	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,077.34
2021	6	0	0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2022	7	0	0	\$0	\$0	\$0	\$0.00	\$46,983.75	\$46,983.75	\$0.00	\$0.00	\$0.00	\$0.00

2016 year gen capy added w/o DSM

2015 life of gen capy (yrs) (>15 yrs)

5 cap cost of capy (base yr \$) \$/kW

1250 fixed O&M cost (base yr \$) \$/kW/yr

\$7.32 Unit Cost of Purchase Power \$/kW

0 Escalation rate for purchase power \$/kW

0 inflation rate

0.033 real discount rate

66 nominal discount rate

0.03 After tax cost of capital

0.03 real discount rate plus inflation

2022 Loads Resources

40 Staff standard

0 already in cap cost

0.041642 annual 2012 Not tailored number of units

0.00757 EIA (Mountain region) 20-year escalation

0 Staff does not estimate benefit-cost ratio

1.81

PV of DSM savings \$16,087.18

PV of DSM costs \$8,883.50

PV of net social benefits \$7,203.69

***AR Program**

Program cost (for 2014) = (total program cost - financial incentives)/# of units

*Used incremental measure cost from MWE AR Proj *kWh saved= projected savings for 2016 divided by # of units (14,760/20)

*kW saved =savings projected for 2016 divided by # of units (41.25/1250)

*incremental measure cost \$80.00 *program cost (\$1.750/20)= \$87.50

*real esc rate of O&M gen comes from EIA data for natural gas prices for electric use-average of the rate of change over the lifetime of the measure

PV of DSM savings	\$6,981.21
PV of DSM costs	\$3,252.43
PV of net social benefits	\$3,728.78

year DSM installed base year	2016	year gen capy added w/o DSM	2022	Loads Resources	
life of DSM (years)	20	life of gen capy (yrs) (>15 yrs)	40	Staff standard	
Number of units of DSM	10	cap cost of capy (base yr \$) \$/kW	\$ 1,139.00	\$689+\$450	
capital cost of DSM \$/unit (base yr \$)	\$167.50	fixed O&M cost (base yr \$) \$/kW/yr	0	already in cap cost	
annual incremental O&M costs of DSM	0	Unit Cost of Purchase Power \$/kW	0.041642	annual 2012 Not tailored	
real escalation rate for DSM O&M	0	Escalation rate for purchase power \$/inflation rate	0.00757	EIA (Mountain region) 20-year escalation	
kW saved (per unit)	0.164	real discount rate	0.03	Staff does not estimate	
kWh savings per year (per unit)	738	nominal discount rate	0.03	After tax cost of capital	
			0.03	real discount rate plus inflation	

benefit-cost ratio

2.15

year	n	kw saved	kWh saved	DSM cap cost nom \$	DSM O & M nom \$	PV fraction	avoided PP cost nom \$	cap cost no dsm nom \$	cap cost with DSM nom \$	fixed O&M no dsm nom \$	fixed O&M with DSM nom \$	DSM costs	PV avoided or def'd gen costs
2015	0	0	0	\$0	\$0	1.000000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2016	1	3.28	14760	\$3,350	\$0	0.970874	\$619.29	\$0.00	\$0.00	\$0.00	\$0.00	\$3,252.43	\$601.25
2017	2	3.28	14760	\$0	\$0	0.942596	\$623.98	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$588.16
2018	3	3.28	14760	\$0	\$0	0.915142	\$628.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$575.35
2019	4	3.28	14760	\$0	\$0	0.888487	\$633.46	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$562.82
2020	5	3.28	14760	\$0	\$0	0.862609	\$638.25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$550.56
2021	6	3.28	14760	\$0	\$0	0.837484	\$643.09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$538.57
2022	7	3.28	14760	\$0	\$0	0.813092	\$647.95	\$3,735.92	\$0.00	\$0.00	\$0.00	\$0.00	\$3,564.49
2023	8	3.28	14760	\$0	\$0	0.789409	\$652.86	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$515.37
2024	9	3.28	14760	\$0	\$0	0.766417	\$657.80	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$504.15
2025	10	3.28	14760	\$0	\$0	0.744094	\$662.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$493.17
2026	11	0	0	\$0	\$0	0.722421	\$0.00	\$0.00	\$3,735.92	\$0.00	\$0.00	\$0.00	(\$2,698.91)

